

9.1 Sampling

Stratified Sampling

If a population is divided into **categories** (e.g. age or gender), you can use a stratified sample – this uses the same proportion of each category in the sample as there is in the population.

To choose a stratified sample:

- Divide the population into **categories**
- Calculate the number needed for each category in the sample using the formula:
- **Randomly** select the sample for each

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Stratified Sampling

Advantages

- If the categories are disjoint (no overlap, e.g. age groups), this should give a representative sample
- It's useful when results may **vary** depending on categories

Disadvantages

The extra detail needed can make it **expensive**

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Stratified Sampling Example

A teacher takes a sample of 20 pupils from her school, stratified by year group. The table below shows the number of pupils in each year group. Calculate how many pupils from each year group should be in her sample.

total population = $120 + 80 + 95 + 63 + 42 = 400$

Year 7 =

Year 8 =

Year 9 =

Year 10 =

Year 11 =

Year Group	No. of pupils
7	120
8	80
9	95
10	63
11	42

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Stratified Sampling Example

A teacher takes a sample of 20 pupils from her school, stratified by year group. The table below shows the number of pupils in each year group. Calculate how many pupils from each year group should be in her sample.

Year 9 =

Year 10 =

Year 11 =

Check that it adds up to 20!

Year Group	No. of pupils
7	120
8	80
9	95
10	63
11	42

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Quota Sampling

Quota sampling is often used in market research. The interviewer will be given a quota of people in each category to interview (e.g. 20 men and 20 women). They then choose people to interview until the quotas are fulfilled.

To choose a quota sample:

- Divide the population into **categories**
- Give each category a **quota** (number of members to sample)
- Collect data until the quotas are met in **all** categories (**without** using random

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Quota Sampling

Advantages

- It is **easy** for the interviewer as they don't need **access** to the whole population, or a **list** of every member
- The interviewer continues to sample until all the quotas are met, so **non-**

Disadvantage

It can be **biased** by the interviewer – selection isn't random, so they might **exclude** some of the population

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Quota Sampling Example

A video game company wants to gather opinions on a new game. The interviewer is asked to interview 75 people aged under 30, and 25 people aged 30+. Give one advantage and one disadvantage of this quota sample.

Advantage: The company doesn't have a full list of everyone who has played the game, so random sampling isn't possible.

Disadvantage: People with strong views on the game are more likely to respond to the

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Ex9.1A Q5, Q6

Optional:

Ex1.3 from CGP